

ABSTRACT

The invention provides a microfabricated device for sorting cells based on a desired characteristic, for example, reporter-labeled cells can be sorted by the presence or level of reporter on the cells. The device includes a chip having a substrate into which is microfabricated at least one analysis unit. Each analysis unit includes a main channel, having a sample inlet channel, typically at one end, and a detection region along a portion of its length. Adjacent and downstream from the detection region, the main channel has a discrimination region or branch point leading to at least two branch channels. The analysis unit may further include additional inlet channels, detection points, branch points, and branch channels as desired. A stream containing cells is passed through the detection region, such that on average one cell occupies the detection region at a given time. The cells can be sorted into an appropriate branch channel based on the presence or amount of a detectable signal such as an optical signal, with or without stimulation, such as exposure to light in order to promote fluorescence.

1013190-06322660